APPENDIX B. TES PLANT MITIGATION MEASURES

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B.1 CLAY REED-MUSTARD (SCHOENCRAMBE ARGILLACEA)

In order to minimize effects to the federally threatened clay reed-mustard, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service) developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[1] prior to any ground disturbing activities to determine if suitable clay reed-mustard habitat is present.
2. Site inventories will be conducted within suitable habitat[2] to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, "avoidance areas"); in such cases, in general, 300' buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:
    a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
    b. Will be conducted in suitable and occupied[3] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually May 1st to June 5th, in the Uinta Basin; however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower),
    c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
    d. Will include, but not be limited to, plant species lists and habitat characteristics, and
    e. Will be valid until May 1st the following year.
3. Design project infrastructure to minimize impacts within suitable habitat[2]:
    a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
    b. Reduce well pad size to the minimum needed, without compromising safety,
    c. Limit new access routes created by the project,

1 *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

2 *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain clay reed-mustard; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>.

3 *Occupied habitat* is defined as areas currently or historically known to support clay reed-mustard; synonymous with "known habitat."

d. Roads and utilities should share common right-of-ways where possible,
e. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
f. Place signing to limit off-road travel in sensitive areas, and
g. Stay on designated routes and other cleared/approved areas.

4. Within occupied habitat[3], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, , in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
   b. Follow the above recommendations (#3) for project design within suitable habitats,
   c. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
   d. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
   e. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from May 1st to June 5th (flowering period); dust abatement applications will be comprised of water only,
   f. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
   g. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population ; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
   h. Construction activities will not occur from May 1st through June 5th within occupied habitat,
   i. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   j. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   k. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
   l. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied clay reed-mustard habitats within 300' of the edge of the surface pipelines' right of ways, 300' of the edge of the roads' right of ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the shrubby reed-mustard is anticipated as a result of project activities.
7. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

B.2 GRAHAM'S BEARDTONGUE (*PENSTEMON GRAHAMII*)

In order to minimize effects to the federally proposed Graham's beardtongue, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service) developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA) and will not result in a trend toward federal listing of the species. The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[4] prior to any ground disturbing activities to determine if suitable Graham's beardtongue habitat is present.
2. All surface disturbing activities having potential direct or indirect impacts on proposed critical habitat[5] are prohibited.
3. Within suitable habitat[6], site inventories will be conducted to determine occupancy. Inventories:
   a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
   b. Will be conducted in suitable and occupied habitat[7] for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to May 20th in the Uinta Basin; however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known

4 *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.
5 *Proposed critical habitat* is defined as habitat proposed in the Federal Register (71 FR 3158) to be designated as critical habitat under Section 4 of the Endangered Species Act.
6 *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Graham's beardtongue plants; detailed habitat and plant descriptions can be found in the Federal Register 71 (12): 3158-3196.
7 *Occupied habitat* is defined as areas currently or historically known to support Graham's beardtongue; synonymous with "known habitat."

population is in flower),
c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
d. Will include, but not be limited to, plant species lists and habitat characteristics, and
e. Will be valid until April 15th the following year.

4. Design project infrastructure to minimize impacts within suitable habitat[2]:
   a. Reduce well pad size to the minimum needed, without compromising safety,
   b. Limit new access routes created by the project,
   c. Roads and utilities should share common right-of-ways where possible,
   d. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
   e. Place signing to limit off-road travel in sensitive areas, and
   f. Stay on designated routes and other cleared/approved areas.
5. Within occupied habitat[4], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Follow the above (#3) recommendations for project design within suitable habitats,
   b. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant,
   c. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to May 20th (flowering period); dust abatement applications will be comprised of water only,
   d. The edge of the well pad should be located at least 300' away from plants,
   e. Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat (exposed raw shale knolls and slopes derived from the Parachute Creek and Evacuation Creek members of the geologic Green River Formation) to ensure pipelines don't move towards the population,
   f. Construction activities will not occur from April 15th through May 30th within occupied habitat,
   g. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   h. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   i. Designs will avoid concentrating water flows or sediments into occupied habitat,
   j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
   k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

6. Occupied Graham's beardtongue habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of well pads shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
7. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Graham's beardtongue is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

B.3 SHRUBBY REED-MUSTARD (*SCHOENOCRAMBE* (=*GLAUCOCARPUM*) *SUFFRUTESCENS*)

In order to minimize effects to the federally endangered shrubby reed-mustard, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service) developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). The following avoidance and minimization measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[8] prior to any ground disturbing activities to determine if suitable shrubby reed-mustard habitat is present.
2. Within suitable habitat[9], site inventories will be conducted to determine occupancy. Inventories:
   a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
   b. Will be conducted in suitable and occupied[10] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (April 15th to August 1st, unless extended by the BLM),
   c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,

8 *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, *in-house assessment.*

9 *Suitable* habitat is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain shrubby reed-mustard; habitat descriptions can be found in the Federal Register 52(193):37416-37420 and in the U.S. Fish and Wildlife Service's 1994 Utah Reed-Mustards Recovery Plan (http://www.fws.gov/endangered/wildlife.html).

10 *Occupied habitat* is defined as areas currently or historically known to support shrubby reed-mustard; synonymous with "known habitat."

   d. Will include, but not be limited to, plant species lists and habitat characteristics, and
   e. Will be valid until April 15th the following year.
3. Design project infrastructure to minimize impacts within suitable habitat[2]:
   a. Reduce well pad size to the minimum needed, without compromising safety,
   b. Limit new access routes created by the project,
   c. Roads and utilities should share common right-of-ways where possible,
   d. Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
   e. Place signing to limit off-road travel in sensitive areas, and
   f. Stay on designated routes and other cleared/approved areas.
4. Within occupied habitat[3], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Follow the above (#3) recommendations for project design within suitable habitats,
   b. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant,
   c. Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to May 30th (flowering period); dust abatement applications will be comprised of water only,
   d. The edge of the well pad should be located at least 300' away from plants,
   e. Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the white shale strata to ensure the pipelines don't move towards the population,
   f. Construction activities will not occur from April 15th through May 30th within occupied habitat,
   g. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   h. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   i. Designs will avoid concentrating water flows or sediments into occupied habitat,
   j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
   k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. Occupied shrubby reed-mustard habitats within 300' of the edge of the surface pipeline right of ways, 300' of the edge of the road right of ways, and 300' from the edge of well pads shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the shrubby reed-mustard is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

B.4 UINTA BASIN HOOKLESS CACTUS (*SCLEROCACTUS WETLANDICUS*)

In order to minimize effects to the federally threatened Uinta Basin hookless cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). The following avoidance and minimization measures will be utilized to the degree practicable in order to minimize impacts to the Uinta Basin hookless cactus:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[11] prior to any ground disturbing activities to determine if suitable Uinta Basin hookless cactus habitat is present.
2. Within suitable habitat[12], site inventories will be conducted to determine occupancy. Inventories:
    a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols.
    b. Will be conducted in suitable and occupied[13] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods. For this species, surveys can be done any time of the year provided there is no snow cover,
    c. Will occur within 315' from the centerline of the proposed 30’ right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
    d. Will include, but not be limited to, plant species lists and habitat characteristics, and
    e. Will be valid until one year from the survey date.
3. Design project infrastructure to minimize impacts within suitable habitat[2]:
    a. Reduce well pad size to the minimum needed, without compromising safety,
    b. Limit new access routes created by the project,
    c. Roads and utilities should share common right-of-ways where possible,
    d. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
    e. Place signing to limit off-road travel in sensitive areas,
    f. Stay on designated routes and other cleared/approved areas, and

11 “Known habitat polygons” *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

12 *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service's 2010 Recovery Outline and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).

13 *Occupied habitat* is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with "known habitat."

   g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat[3], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants when and where practicable:
   a. Follow the above (#3) recommendations for project design within suitable habitats,
   b. Buffers of 300 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,
   c. Surface pipelines will be laid such that a 300-foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population,
   d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   f. Designs will avoid concentrating water flows or sediments into occupied habitat,
   g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
   h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. Occupied Uinta Basin hookless cactus habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA. Additional site-specific measures that could be employed to minimize take of individual plants could include:

1. Additional habitat surveys to determine key population centers for avoidance in the project area;
2. Transplant of individual plants to on-site holding areas or off-site gardens or greenhouses for propagation and reintroduction following site rehabilitation;
3. Transplant of individual plants into vacant or rehabilitated habitat; or
4. Relocation of surface soils from habitat to provide substrate for transplantation efforts.

B.5 PARIETTE CACTUS (*SCLEROCACTUS BREVISPINUS*)

In order to minimize effects to the federally threatened Pariette cactus, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). The following avoidance and minimization measures would be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat[14] prior to any ground disturbing activities to determine if suitable Pariette cactus habitat is present.
2. Within suitable habitat[15], site inventories will be conducted to determine occupancy. Inventories:
   a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
   b. Will be conducted in suitable and occupied[16] habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods. *Sclerocactus brevispinus* surveys should be conducted March 15th to June 30th, unless extended by the BLM.
   c. Will occur within 115' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 100' from the perimeter of disturbance for the proposed well pad including the well pad,
   d. Will include, but not be limited to, plant species lists and habitat characteristics, and
   e. Will be valid until March 15th the following year.
3. Design project infrastructure to minimize impacts within suitable habitat[2]:
   a. Reduce well pad size to the minimum needed, without compromising safety,
   b. Limit new access routes created by the project,
   c. Roads and utilities should share common right-of-ways where possible,
   d. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
   e. Place signing to limit off-road travel in sensitive areas,
   f. Stay on designated routes and other cleared/approved areas, and
   g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.
4. Within occupied habitat[3], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Follow the above (#3) recommendations for project design within suitable habitats,

14 *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

15 *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service's 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html).

16 *Occupied habitat* is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with "known habitat."

b. Buffers of 100 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,
c. Surface pipelines will be laid such that a 100 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population,
d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
f. Designs will avoid concentrating water flows or sediments into occupied habitat,
g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Pariette cactus habitats within 100' of the edge of the surface pipelines' right-of-ways, 100' of the edge of the roads' right-of-ways, and 100' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Parietttte cactus is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

B.6 UTE LADIES'-TRESSES (*SPIRANTHES DILUVIALIS*)

In order to minimize effects to the federally threatened Ute ladies'-tresses, the Bureau of Land Management (BLM) in coordination with the U.S. Fish and Wildlife Service (Service), developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the Endangered Species Act (ESA). Ute ladies'-tresses habitat is provided some protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Should plants, habitat, or populations not be protected under these regulatory mechanisms, the following conservation measures should be included in the Plan of Development:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area, including areas where hydrology might be affected by project activities, within potential habitat[17] prior to any ground disturbing activities to determine if suitable Ute ladies'-tresses habitat is present.
2. Within suitable habitat[18], site inventories will be conducted to determine occupancy. Inventories:
   a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
   b. Will be conducted in suitable and occupied[19] habitat for all areas proposed for surface disturbance or areas that could experience direct or indirect changes in hydrology from project activities,
   c. Will be conducted prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods (usually August 1st and August 31st in the Uinta Basin; however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower),
   d. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad,
   e. Will include, but not be limited to, plant species lists, habitat characteristics, source of hydrology, and estimated hyroperiod, and
   f. Will be valid until July 20th the following year.
3. Design project infrastructure to minimize direct or indirect impacts to suitable habitat[2] both within and downstream of the project area:
   a. Alteration and disturbance of hydrology will not be permitted,
   b. Reduce well pad size to the minimum needed, without compromising safety,
   c. Limit new access routes created by the project,
   d. Roads and utilities should share common right-of-ways where possible,
   e. Reduce width of right-of-ways and minimize the depth of excavation needed for the road bed,
   f. Construction and right-of-way management measures should avoid soil compaction that would impact Ute ladies' tresses habitat,
   g. Off-site impacts or indirect impacts should be avoided or minimized (i.e. install berms or catchment ditches to prevent spilled materials from reaching occupied or suitable habitat through either surface or groundwater),
   h. Place signing to limit off-road travel in sensitive areas,
   i. Stay on designated routes and other cleared/approved areas, and
   j. All disturbed areas will be re-vegetated with species approved by FWS and BLM botanists.

17 *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

18 *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Ute ladies'-tresses. Habitat descriptions can be found in Recovery Plans and Federal Register Notices for the species at <http://www.fws.gov/endangered/wildlife.html>.

19 *Occupied habitat* is defined as areas currently or historically known to support Ute ladies'-tresses; synonymous with "known habitat."

4. Within occupied habitat[20], project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:
   a. Follow the above (#3) recommendations for project design within suitable habitats,
   b. Buffers of 300 feet minimum between right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated,
   c. Surface pipelines will be laid such that a 300-foot buffer exists between the edge of the right of way and the plants, using stabilizing and anchoring techniques when the pipeline crosses habitat to ensure the pipelines don't move towards the population,
   d. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
   e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
   f. Designs will avoid altering site hydrology and concentrating water flows or sediments into occupied habitat,
   g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, with berms and catchment ditches to avoid or minimize the potential for materials to reach occupied or suitable habitat, and
   h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.
5. Occupied Ute ladies'-tresses habitats within 300' of the edge of the surface pipelines' right-of-ways, 300' of the edge of the roads' right-of-ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.
6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Ute ladies'-tresses is anticipated as a result of project activities.

Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

20 *Occupied habitat* is defined as areas currently or historically known to support Ute ladies'-tresses; synonymous with "known habitat."